

***Claim Rejections – 35 U.S.C. § 112***

Claims 2 and 4-10 were rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the term “essentially all” in Claims 2, 5 and 10 was deemed confusing. Applicant believes that the term “essentially all” as appearing in the phrase “particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm” is clear to one of ordinary skill in the art in view of the specification. The specification at the top of page 10 refers to a capillary hydrodynamic fractionation (CHDF) technique known in the art for measuring both the average particle size and detailed particle size distribution. Information on such a measuring device can be found on the web site of Matec Instrument Companies of Massachusetts at <http://www.matec.com>. Given that no machine is 100% accurate, the term “essentially all” is utilized to allow for slight inaccuracies of available measuring technologies. Moreover, the federal circuit has stated that the term “essentially” is considered definite where the specification contains guidelines sufficient to enable a person of ordinary skill in the art. *In re Marosi*, 710 F.2d 799 (Fed. Cir. 1983). The word “essentially” has also been interpreted to have a similar meaning as the word “about.” See, *Eiselstein v. Frank*, 52 F.3d 1035 (Fed. Cir. 1995).

Claim 4 was rejected as being an improper Markush grouping. Claim 4 has been amended, rendering this rejection moot.

***Claim Rejections – 35 U.S.C. § 102***

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim*. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention. *Scripps Clinic & Research Foundation v. Genentech Inc.*, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). As discussed below, none of the references cited by the Examiner recite all of the elements of Applicant’s claimed invention.

The Examiner rejected Claims 1 and 3-4 under 35 U.S.C. § 102(b) for anticipation by EP 455379. Claim 1 has been amended to incorporate dependent Claim 2, thereby rendering this rejection moot.

The Examiner rejected Claims 1 and 3-4 under 35 U.S.C. § 102(a) for anticipation by EP 960919. Claim 1 has been amended to incorporate dependent Claim 2, thereby rendering this rejection moot.

The Examiner rejected Claims 1, 3-4 and 8-9 under 35 U.S.C. § 102(b) for anticipation by EP 867484. Claim 1 has been amended to incorporate dependent Claim 2 and Claim 8 has been amended to incorporate dependent Claim 10, thereby rendering this rejection moot.

The Examiner rejected Claims 1-10 under 35 U.S.C. § 102(b) for anticipation by EP 590604. As stated by the Examiner, EP 590604 discloses a copolymer with an average particle size of 100-1000 nm with at least 95% of the copolymer particles having an average particles size of 100-500 nm and a  $T_g$  of 10°C to 50°C. In contrast, Applicant claims an average particle size of 250-400 nm and a particle size distribution of 130-450 nm with a  $T_g$  of -20°C to 25°C. Applicant has also demonstrated in the specification, particularly the examples, the improvement in wet-rub smear resistance and highlighter resistance for inks made using a binder having such particle size distributions and glass transition temperatures. Please note that the disclosure of a broad chemical range does not constitute an anticipation of a specific range falling within it. *See, Imperial Chemical Industries, PLC v. Henkel Corp.*, 545 F. Supp. 635, 646 (D. Del. 1982); *In re Wertheim*, 541 F.2d 257, 265 (Fed. Cir. 1976) and *Chisum*, Patents § 3.02[2]. EP 590604 discloses an average particle size of 100-1000 nm (primarily 100-500 nm), while the present invention claims a minimum-maximum range of 130-450 nm, with an even tighter distribution of average particle size range of 250-400 nm. Similarly, EP 590604 discloses a  $T_g$  range different from Applicant's  $T_g$  range. The particle size distributions and  $T_g$  range numbers of EP 590604 and Applicant's invention are not equivalent and therefore a rejection based on anticipation is misplaced. Moreover, EP 590604 discloses hair spray materials, not inks, and is silent as to the needs and goals of obtaining superior ink binding properties.

The Examiner rejected Claims 1, 3-4 and 8-9 under 35 U.S.C. § 102(b) for anticipation by US 5622778 to Horii et al. Claim 1 has been amended to incorporate dependent Claim 2 and

Claim 8 has been amended to incorporate dependent Claim 10, thereby rendering this rejection moot.

***Claim Rejections – 35 U.S.C. § 103(a)***

Determination of obviousness cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention. There must be a teaching or suggestion within the prior art, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources of information, to select particular elements, and to combine them in the way they were combined by the inventor. *ATD Corporation v. Lydall, Inc.*, 48 USPQ 2d 1321, 1329 (Fed. Cir. 1998). In ascertaining the differences between the prior art and the claims at issue it is essential to view the claims at issue as “the invention as a whole.” In so doing, it is legally improper to focus on the obviousness of substitutions and differences between the claimed invention and the prior art rather than on the obviousness of the claimed invention *as a whole* relative to that prior art. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 USPQ 81, 93 (Fed. Cir. 1986), cert. Den., 480 US 947 (1987).

The Examiner rejected Claims 2 and 10 under 35 U.S.C. § 103(a) for obviousness over EP 867484 or US 5622778 (Horii et al.) either of which in view of US 5959024 (Farwaha et al.). The Examiner states that “the difference between either EP 867484 or Horii et al. and the present claimed invention is the requirement in the claims of particle size distribution of the polymer” and combines Farwaha et al. to cure this deficiency. Applicant respectfully disagrees.

There is no suggestion, teaching or motivation for one skilled in the art to combine the references in the manner combined by the Examiner and moreover, the above references, alone or in combination, fail to disclose the Applicant’s claimed invention. Farwaha et al., as a whole, is “directed to the use of nonpolymerizable, hydrophobically-modified saccharides as emulsion stabilizers during the synthesis of acrylic latexes, and coating compositions prepared with acrylic latexes which have been prepared using the saccharide stabilizers. (Abstract).” Farwaha et al. fails to provide any information related to binders for inks and fails to describe properties attributable to inks. One skilled in the art would not look to a patent about saccharide stabilizers to find one or two lines about improving gloss with narrow particle size distributions and

saccharide stabilizers in order to achieve superior ink binding properties, highlighter resistance and reduced clogging for printer heads. Also, Farwaha et al. fails to disclose any specific range or any benefits associated with any specific range, even as related to coatings and saccharide stabilizers, let alone inks. Farwaha et al. merely discloses that being less than 500 nm in average particle size for coatings using saccharide stabilizers to form the coatings will generally provide a more water resistant polymer. There is no teaching, suggestion or motivation in any of the references cited about the need for a specific particle size range claimed by Applicant or for the specific properties achieved. In contrast, Applicant's specification, particularly in the examples and comparative examples, demonstrates the advantages of the specific particle size range – not merely average particle size range – to achieve superior binding properties. Given the teachings of the above references, one skilled in the art would not expect the results achieved and demonstrated by the Applicant with the specific particle size distribution range claimed.

The Examiner rejected Claims 5-7 under 35 U.S.C. § 103(a) for obviousness over EP 867484 or US 5622778 (Hori et al.) either of which in view of US 5959024 (Farwaha et al.) for the same basis as recited above. Applicant maintains that such claims are patentable in view of the arguments presented above.

Applicant's attorney thanks the Examiner for the time taken to review this response. In view of the foregoing remarks and claim changes, Applicant respectfully requests reconsideration of the rejections and allowance of the claims. The Examiner is encouraged to contact the attorney listed below if there are any questions or comments.

Respectfully submitted,



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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****In The Claims**

Please amend the claims as shown below.

1. (Amended) A polymeric binder comprising a polymer having a glass transition temperature in the range from -20°C to 25°C, an average particle diameter in the range from 250 to 400 nm, a particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm and an acid component present in a range from 1 to 10 wt.% of the polymer.
2. ~~The binder of Claim 1 wherein the polymer has a particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm.~~
4. (Amended) The binder of Claim 1 wherein the acid component is selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acids, vinylsulfonic acid, and acid derived from methacrylic anhydride, maleic anhydride, sodium vinylsulfonate, and acrylamidopropane sulfonate, ~~or~~ and combinations thereof.
8. (Amended) An ink binder comprising a polymer consisting essentially of:
  - (c) one or more monomers selected from the group consisting of acrylates, methacrylates, styrene, substituted styrene, fluoromethacrylates, vinyl acrylates, vinyl acetates, acrylamides, substituted acrylamides, methacrylamides, substituted methacrylamides, and
  - (d) an acid component selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, maleic acids, vinylsulfonic acid, and acid derived from methacrylic anhydride, maleic anhydride, sodium vinylsulfonate, ~~and~~ acrylamidopropane sulfonate, ~~or~~ and combinations thereof, wherein the acid component is present in a range from 1 to 3 wt.% of the polymer;

wherein the polymer has a glass transition temperature in the range from -20°C to 25°C, a particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm and an average particle diameter in the range from 250 to 400 nm.
10. ~~The binder of Claim 8 wherein the polymer has a particle size distribution such that essentially all the particles have a diameter in the range from 130 to 450 nm.~~